

# H I L G A R D I A

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## FALSE SPIDER MITES OF THE GENUS *DOLICHOTETRANYCHUS* (Acarina: Tenuipalpidae)<sup>1</sup>

EDWARD W. BAKER<sup>2</sup> and A. EARL PRITCHARD<sup>3</sup>

Representatives of the genus *Dolichotetranychus* are tiny, slender, bright-red mites that are sometimes found in masses under the leaf sheaths of grasses or in their floral heads. Some species feed on other monocotyledonous plants such as pineapple and orchids, and one occurs on a dicotyledon.

The more recent students of the groups, namely Sayed (1942) and McGregor (1949), regarded all their specimens from various hosts as representatives of a single species. It is true that specimens collected from all parts of the world are very similar morphologically and their taxonomy is difficult. But Pritchard and Baker (1952) showed that the two species of *Dolichotetranychus* known from California are distinct, and the present revision of the genus from a world viewpoint indicates that a number of species are represented.

*Dolichotetranychus* and related genera were previously considered by us under the family name Phytoptipalpidae, but the group was first given a supergeneric name, the Tenuipalpini, by Berlese (1913).

### GENUS *DOLICHOTETRANYCHUS* SAYED

*Dolichotetranychus* Sayed, 1938, Paris Mus. d'Hist. Nat. Bul. (sér. 2) 10 (6): 606; Sayed, 1942, Soc. Fouad 1<sup>er</sup> Ent. Bul. 26: 81; Pritchard and Baker 1952, Univ. California Pubs. Ent. 9 (1): 44. Type: *Stigmaeus floridanus* Banks; monobasic. *Trichadenus*, McGregor, 1949 (not Rondani, 1870), So. California Acad. Sci. Mem. 3(2): 29. Misidentification.

The genus *Dolichotetranychus* may be readily distinguished from other tenuipalpids by having a three-segmented palpus, the rostral shield absent, and the hysterosoma with two pairs of dorsocentral setae, one pair of dorso-sublaterals, and five pairs of dorsolaterals.

Comparative illustrations of the male genitalia and the female genitoanal region are presented in figures 1 and 2.

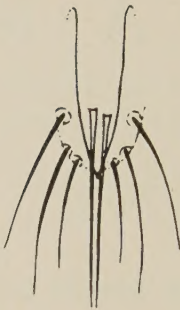
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CARNEA



MICIDUS



ANCISTRUS



SALINAS



SUMMERSI



VANDERGOOTI  
(DENDROBIUM)



VANDERGOOTI  
(ARUNDINA)



MACER



FLORIDANUS  
(PINEAPPLE)



FLORIDANUS  
(BOUTELLOA)



AUSTRALIANUS



APACHES

Fig. 1. Male genitalia, all drawn to the same scale.



## Key to Species: Males

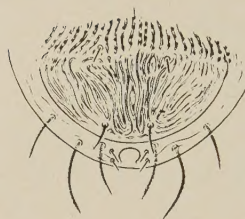
1. Tarsus II with a single rodlike seta..... 2
- Tarsus II with two rodlike setae..... 3
2. Palpus with a single sensilla distally..... 9. *australianus*
- Palpus with two sensillae distally..... 10. *apaches*
3. Palpus with a single sensilla distally..... 6. *vandergooti*
- Palpus with two sensillae distally..... 4
4. Claw with hook absent..... 5
- Claw with hook present..... 6
5. Tibia IV more than two thirds as long as genital stylets..... 7. *macer*
- Tibia IV slightly more than half as long as genital stylets..... 4. *salinas*
6. With three pairs of genitoanal setae; gnathosoma with one pair of ventral setae..... 7
- With two pairs of genitoanal setae; gnathosoma without ventral setae..... 5. *summersi*
7. Femur II with a long dorsal seta reaching or almost reaching base of tarsus..... 8
- Femur II with dorsal seta shorter than or not much longer than segment..... 8. *floridanus*
8. Body with dorsal setae long and strongly serrate; dorsal striae without tubercles; hook of claw very large..... 3. *ancistrus*
- Body with dorsal setae short and simple; dorsal striae with tubercles; hook of claw not strongly enlarged..... 9
9. Claw with outer tenent hairs longer than inner ones and all united distally; genital stylets very slender, as long as genu plus tibia IV.... 2. *micidus*
- Claw with outer tenent hairs no longer than inner ones and not united distally; genital stylets short and very stout..... 1. *carnea*

## Key to Species: Females

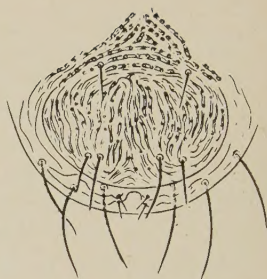
1. Femur II with a long dorsal seta almost reaching base of tarsus..... 2
- Femur II with dorsal seta shorter than or not much longer than segment. 5
2. With two pairs of anal setae..... 3
- With one pair of anal setae..... 1. *carnea*
3. Tarsal claw with a hook..... 4
- Tarsal claw without a hook..... 4. *salinas*
4. Body with dorsal setae short and smooth..... 2. *micidus*
- Body with dorsal setae long, strong, and serrate..... 3. *ancistrus*
5. With one pair of anal setae..... 6
- With two pairs of anal setae..... 7
6. Pregenital setae separated by distance equal to width of genital plate..... 7. *macer*
- Pregenital setae separated by distance less than width of genital plate..... 6. *vandergooti*
7. With two pairs of genital setae; gnathosoma with a pair of ventral setae. 8
- With one pair of genital setae; gnathosoma with ventral setae absent..... 5. *summersi*
8. Genital plate with tuberculate striae..... 10. *apaches*
- Genital plate with smooth striae..... 8. *floridanus*, 9. *australianus*



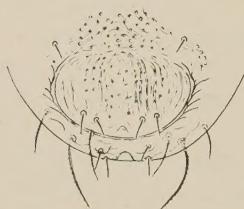
CARNEA



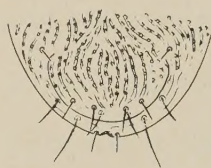
SUMMERSI



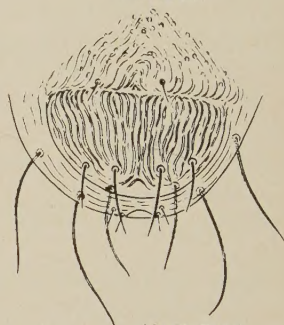
MICIDUS



SALINAS



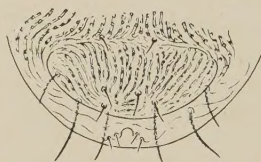
MACER



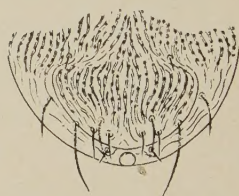
ANCISTRUS



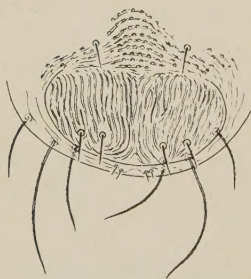
VANDERGROOTI (ARUNDINA)



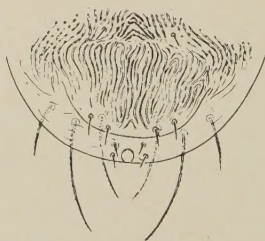
APACHES



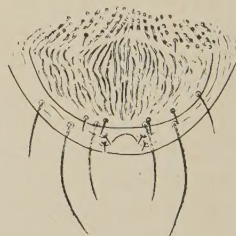
VANDERGROOTI (DENDROBIUM)



FLORIDANUS (BOUTELLOA)



AUSTRALIANUS



FLORIDANUS (PINEAPPLE)

Fig. 2. Female genitoanal regions, all drawn to the same scale.



*1. Dolichotetranychus carnea* (Banks)

(Fig. 3)

*Siteroptes carnea* Banks, 1906, Ent. Soc. Wash. Proc. (1905) 7:140. Lectotype by present designation, female, Salt Lake City, Utah, on *Sporobolus asperifolius*; in the U. S. National Museum.

*Dolichotetranychus carnea*, Pritchard and Baker, 1952, Univ. California Pubs. Ent. 9(1):44.

*Stigmaeodes cinctus* Ewing, 1911, Psyche 18:39. Types, females, Ft. Collins, Colorado, on wild grass; in the U. S. National Museum. *New synonymy*.

The female of *Dolichotetranychus carnea* may be recognized by having the dorsal seta on femur II long, together with having a single pair of anal setae. The short, stout genital stylets of the male are very distinctive.

**Male.** Body short, stout (the only specimen studied is somewhat fore-shortened by mounting). Palpus with dorsal seta on third segment and a long and a medium-length seta distally; rostrum with a pair of ventral setae. Dorsal seta of femur II long, reaching about to distal end of genu; all long leg setae serrate; tarsi I and II each with two rodlike sensory setae; claw with strong, well-defined hook, the outer tenent hairs not much longer than the inner hairs and with separate strands. Propodosoma with long smooth striae running longitudinally except for the transverse striae anterior to the first pair of propodosomal setae; tubercles only on small medioposterior portion; dorsal propodosomals short, smooth, of equal length. Metapodosomals of same length as propodosomals; striate arranged in swirling pattern as figured; small tubercles found only in area between the first and second pairs of metapodosomal setae. Opisthosomal setae of same structure as other setae; striae shorter than elsewhere, without tubercles; the three pairs of dorsolaterals stronger than other dorsal setae. Genital stylets short, stout, about two thirds as long as tibia IV; in the only specimen available for study only two pairs of genitoanal setae present on left side, three pairs on right side, the outer pair slightly stronger and longer than others. Posterior medioventral hysterosomals short, same length as coxal setae, far shorter than anterior pair. Length of body  $233\mu$ , including rostrum  $286\mu$ ; greatest width of body  $160\mu$ .

**Female.** Body relatively broad. Palpus with dorsal seta on third segment and two rodlike setae distally. Legs with long setae on femora II; tarsi I and II each with a single rodlike seta; tarsal claws hooked, the outer tenent hairs much longer than others. Propodosoma with long striae, with tubercles on anterior transverse striae anterior to first pair of propodosomals, and on posterior margin of propodosoma; dorsal propodosomals short, serrate, about one fourth as long as distance between anterior pair. Hysterosomal striae longitudinal, V-shape; all but posterior portion covered by tubercles; humerals about same size as propodosomals, dorsocentrals small, simple; first two pairs of dorsolaterals serrate, same length as dorsocentrals; last three pairs serrate, of equal length and about four times longer than others. Entire venter of mite except for coxal plates covered by long striae with tubercles. Anterior medioventral setae much longer than posterior pair. Genital plate with longitudinal striae, without tubercles; pregenital setae about two thirds as long as genital setae; a single pair of short anal setae

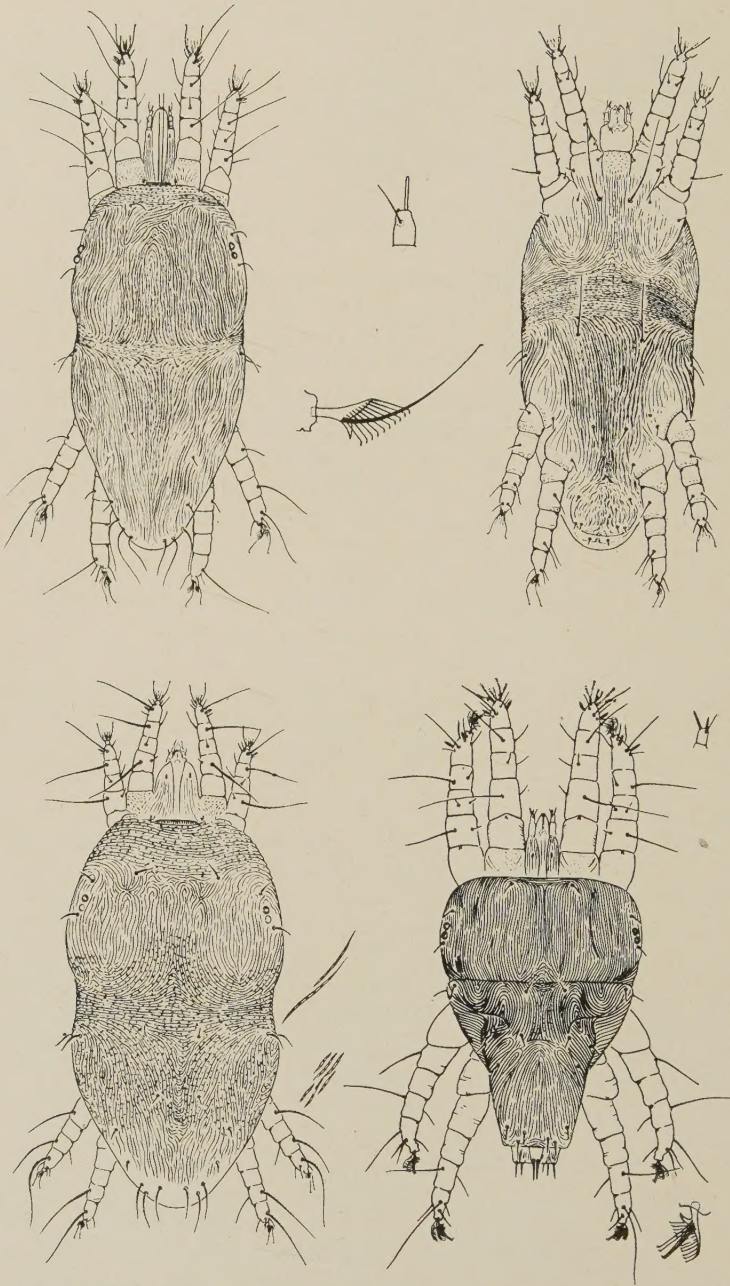


Fig. 3. *Dolichotetranychus carnea* (Banks): above, dorsal and ventral aspects of cotype female of *D. carnea*, with enlargements of terminal segment of palpus and claw on tarsus IV; lower left, dorsal aspect of cotype female of *Stigmaeodes cinctus* Ewing, with enlargement of striae; lower right, dorsal aspect of male (North Dakota), with enlargement of terminal segment of palpus and claw of tarsus IV.



present. Length of body  $313\mu$ , including rostrum  $386\mu$ ; greatest width of body  $160\mu$ .

This species is widespread on grasses in the western United States. The types studied are from Salt Lake City, Utah, on (*Sporobolus asperifolius*) = *Muhlenbergia asperifolia*, and from Denver, Colorado, on grass. Additional specimens studied are from Mandan, North Dakota, October 15, 1920 (J. T. Sarvis), on *Distichlis spicata*; and from Idaho, November 21, 1912 (Frank Goeder), on grass.

## 2. *Dolichotetranychus micidus*, n. sp.

(Fig. 4)

The female of *Dolichotetranychus micidus* may be recognized by having the dorsal seta on femur II long and the genital setae long. The long, slender genital stylets of the male and the long genitoanal setae are distinctive. This species is known only from Colorado, on grass.

**Male.** Body slender. Palpus with dorsal seta on third segment and a long and short sensory rodlike seta distally; rostrum with a pair of small setae. Legs with dorsal setae of femora II long; tarsi I and II each with two sensory rods; claw with well-defined hook, the outer tenent hairs separate and only slightly longer than other tenent hairs. Propodosoma with long striae running longitudinally except for transverse striae anterior to first pair of propodosomal setae; striae with few small tubercles; dorsal propodosomals setiform, smooth, the anterior pair one third to one half as long as distance between them. Metapodosoma with striae arranged in transverse pattern medially, with few tubercles; dorsocentrals and humerals very short, smooth. Opisthosoma with long longitudinal striae, with few tubercles; the first two pairs of dorsolaterals short and similar to dorsocentrals, the three posterior dorsolaterals stronger, serrate, and about twice as long as other setae. Genital stylets long, about twice as long as tibia IV, the stylets and genitoanal setae being the longest in the genus. Propodosoma and hysterosoma with ventral striae long, with tubercles, the pattern as figured; anterior and posterior medioventrals short, of equal length, about half as long as distance between them. Length of body  $266\mu$ , including rostrum  $306\mu$ ; greatest width of body  $153\mu$ .

**Female.** Palpus similar to that of male. Setal pattern of legs similar to that of male; tarsi I and II each with a single sensory rod; claw similar to that of male. Propodosoma dorsally with longitudinal striae, with few tubercles; propodosomal setae slender, faintly serrate, of medium length, the anterior pair about one third as long as distance between them. Hysterosoma with longitudinal striae of medium length; the entire dorsum covered with small tubercles; dorsocentral and anterior two pairs of dorsolateral setae small, simple, of equal size; humeral setae about twice as long as dorsocentrals; last three pairs of dorsolaterals serrate, three times length of anterior pairs. Genital plate with longitudinal striae, with few tubercles; genital setae of moderate length, serrate, the inner pair longer than outer pair and the latter about same length as the simple pregenital setae; with two pairs of anal setae. Anterior and posterior medioventrals of moderate and equal length. Length of body  $280\mu$ , including rostrum  $340\mu$ ; greatest width of body  $146\mu$ .

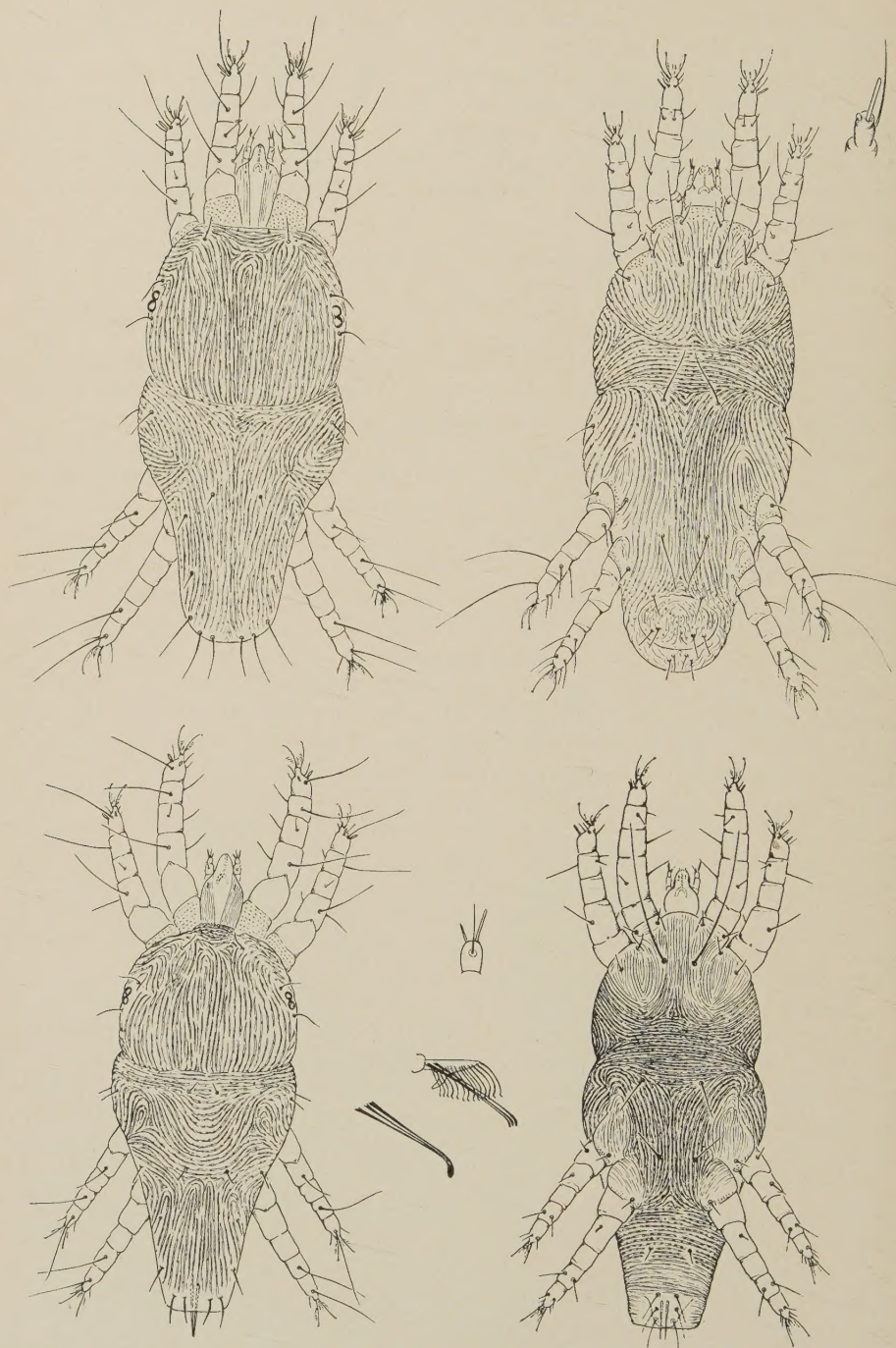


Fig. 4. *Dolichotetranychus micidus*, n. sp.: above, dorsal and ventral aspects of female, with enlargement of terminal segment of palpus; below, dorsal and ventral aspects of male, with enlargements of terminal segment of palpus and claw.



**Holotype.** Male, Denver, Colorado, on (*Sporobolus asperifolius*) = *Muhlenbergia asperifolia*; type no. 2209 in the U. S. National Museum.

**Paratypes.** Twelve males and 44 females with the above data.

### 3. *Dolichotetranychus ancistrus*, n. sp.

(Fig. 5)

Adults are distinctive in that the dorsal setae of the body are long and strongly serrate and the hook of the tarsal claws is very strongly developed. This is the only species of *Dolichotetranychus* known from a dicotyledonous host—a plant belonging to the Scrophulariaceae and native to New Zealand.

**Male.** Body slender. Palpus with dorsal seta on third segment and two rodlike setae distally; rostrum elongate, reaching to distal end of femur I. Femur II with long seta; tarsi I and II each with two rodlike setae; tarsal claw with strong hook, the outer tenent hairs only slightly longer than others. Propodosoma with long longitudinal striae, without tubercles; dorsal propodosomals about as long as distance between them; other dorsal body setae of about same length, and all stout and strongly serrate. Metapodosoma without dorsal tubercles; striae arranged as figured. Opisthosoma with long nontuberculated longitudinal striae. Genital stylets about the same length as tibia IV; the three pairs of genitoanal setae of equal length, about two thirds as long as stylets. Length of body  $286\mu$ , including rostrum  $386\mu$ ; greatest width of body  $153\mu$ .

**Female.** Palpus similar to that of male. Rostrum long, slender, reaching to distal end of femur I. Setal pattern of legs similar to that of male; claws similar to those of male. Striations on dorsum long, without tubercles, and arranged longitudinally. Dorsal setae long, strongly serrate, the posterior pair of dorsolaterals only slightly more than half as long as others. Ventrally, tubercles present on transverse striae of propodosoma and a few tubercles present anterior to genital plate. Anterior medioventrals long, about twice as long as posterior medioventrals and the latter about three times as long as seta on coxa IV. Genital plate with longitudinal striae, without tubercles; pregenital setae quite short; genital setae two to three times as long as pregenital setae, simple; with two pairs of anal setae. Length of body  $320\mu$ , including rostrum  $400\mu$ ; greatest width of body  $146\mu$ .

**Nymphs.** Similar to female.

**Holotype.** Male, Rangitoto Island, New Zealand, July, 1949 (K. P. Lamb), in stem galls on *Hebe salicifolia*; type no. 2211 in the U. S. National Museum.

**Paratypes.** Twenty-nine males, 234 females with same data as holotype. Many nymphs are also in the series.

### 4. *Dolichotetranychus salinas* Pritchard and Baker

(Fig. 6)

*Dolichotetranychus salinas* Pritchard and Baker, 1952, Univ. California Pubs. Ent. 9(1): 46. Holotype, male, Modesto, California, on *Distichlis spicata*; in the U. S. National Museum.

*Dolichotetranychus salinas* may be differentiated from all other species of the genus by completely lacking a hook on the claw and by having a long seta on femur II. It occurs in the United States on saltgrass.

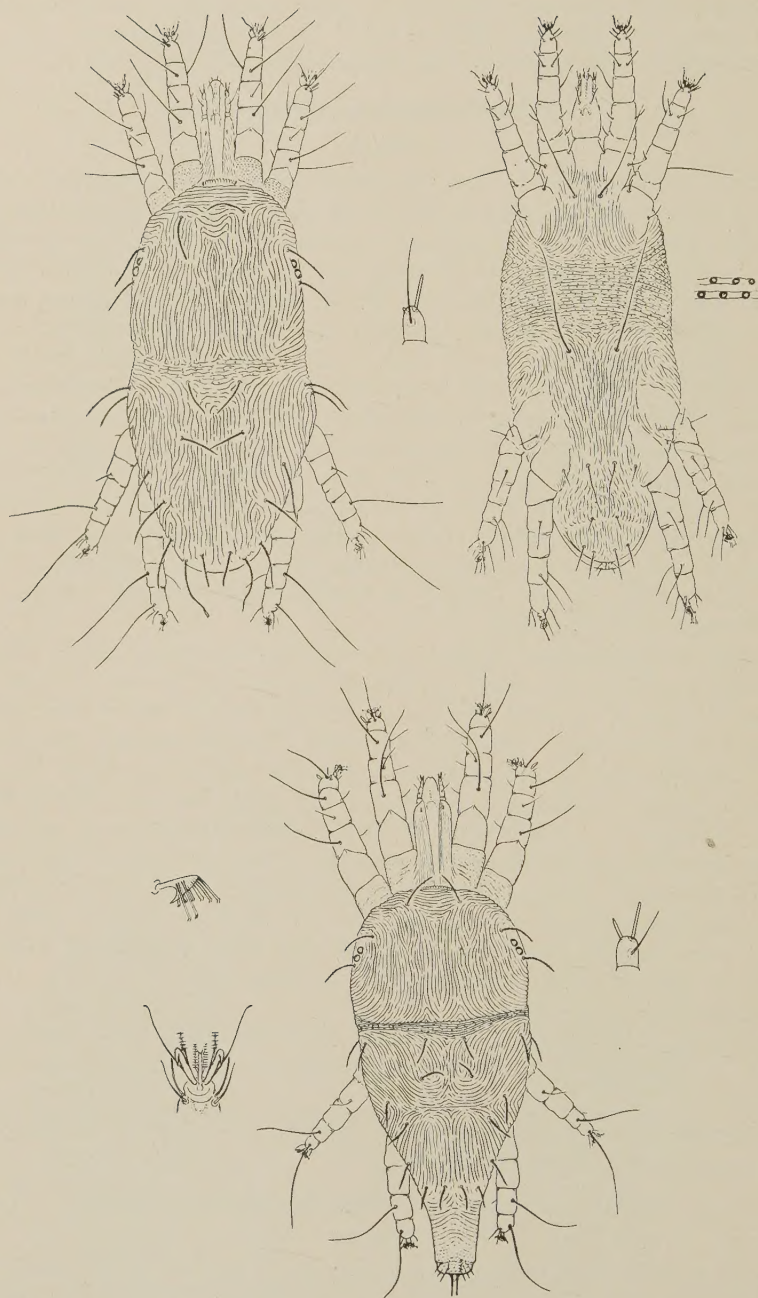


Fig. 5. *Dolichotetranychus ancistrus*, n. sp.: above, dorsal and ventral aspects of female, with enlargement of third palpal segment and ventral transverse striae; below, dorsal aspect of male, with enlargement of claw, tarsal appendages, and third palpal segment.



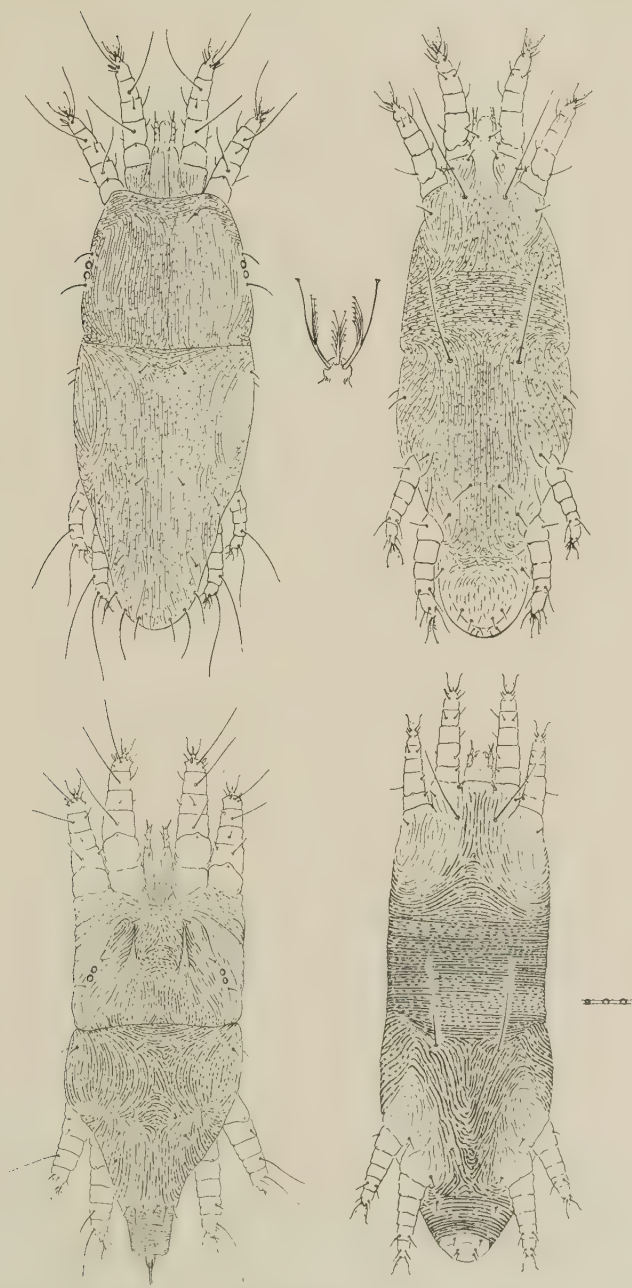


Fig. 6. *Dolichotetranychus salinas* Pritchard and Baker: above, dorsal and ventral aspects of female, with enlargement of tarsal appendages; below, dorsal aspect of male and ventral aspect of nymph, with enlargement of ventral transverse stria.

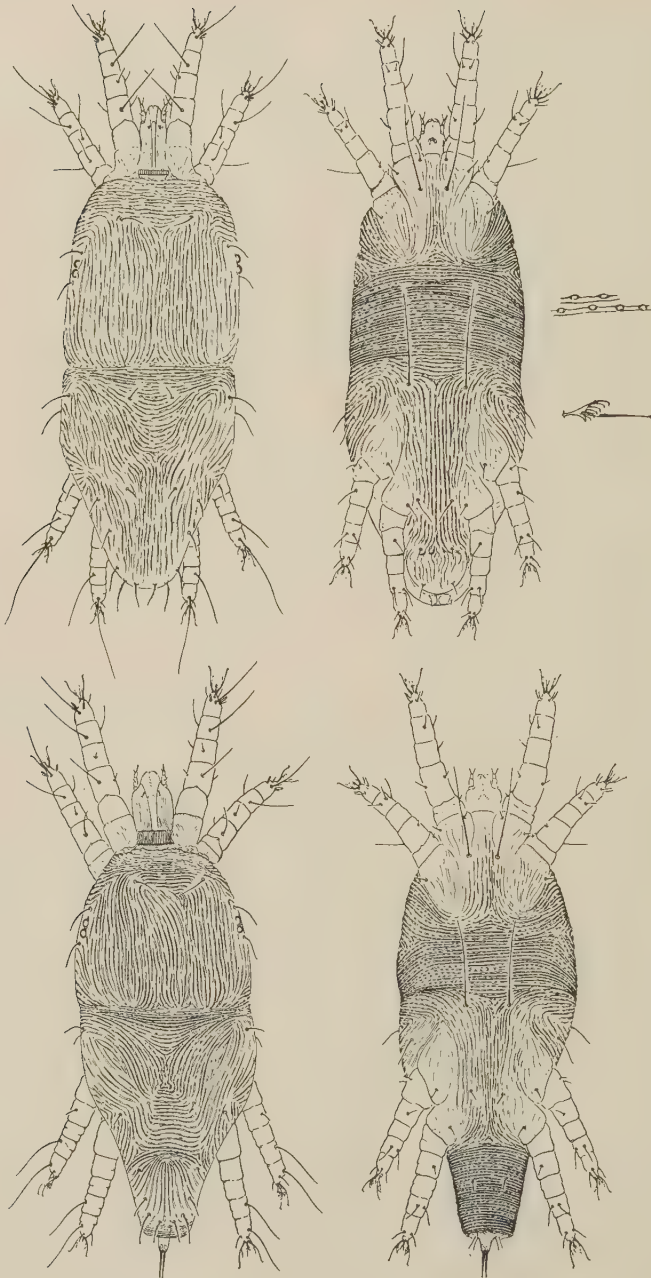


Fig. 7. *Dolichotetranychus summersi* Pritchard and Baker: above, dorsal and ventral aspects of female, with enlargements of striae and claw; below, dorsal and ventral aspects of male.



**Male.** Body slender. Palpus with short dorsal seta on third segment and terminally with a long sensory rod and a short, angularly pointed sensory seta. Femur II with short dorsal seta; tarsi I and II each with two sensory rodlike setae; claw with hook absent, the outer tenent hairs united, much longer than others. Propodosoma with striae of dorsum transverse anteromedially and otherwise longitudinal, with tubercles posteriorly and medially and on anterior transverse striae. Dorsal propodosomal setae setiform, practically smooth, short, the anterior pair less than one fourth the length of distance between them. Metapodosoma with striae of dorsum forming an X medially and longitudinal laterally, all striae with tubercles. Opisthosoma with striae longitudinal in median area and with tubercles laterally; dorsolaterals of medium length, smooth, the last three pairs slightly longer than first two pairs. Genital stylets moderately stout, slightly longer than tibia IV; with three pairs of genitoanal setae, the first pair being the longest. Length of body  $206\mu$ , including rostrum  $250\mu$ ; greatest width of body  $103\mu$ .

**Female.** Palpus with long dorsal seta and a slender sensory rod terminally on third segment. Tarsi I and II each with a single sensory rodlike seta; tarsal claws similar to those of male; femur II with a long dorsal seta reaching almost to base of tarsus. Propodosoma with tubercles anteriorly, posteriorly, and medially; hysterosoma with longitudinal striae and covered with tubercles; dorsal setae similar to those of male, but third and fifth dorsolateral hysterosomal setae longer and fourth still longer. Genital plate with longitudinal striae, with tubercles. Pregenital and genital setae small, short, of equal size; with two pairs of anal setae. Anterior medioventral hysterosomal setae longer than distance between them; posterior pair slightly longer than seta on coxa IV and about one fourth as long as anterior pair. Length of body  $280\mu$ , including rostrum  $333\mu$ ; greatest width of body  $126\mu$ .

The types are from California and New Mexico, on *Distichlis spicata*. A new record is from Stevensville, Maryland, October 19 and November 28, 1951 (H. S. McConnell), on *Distichlis spicata*. New California collections studied are from Nortonville, October 15, 1952 (W. C. Bentnick), on *D. spicata*; Newport Beach, August 18, 1952 (R. E. Beer), on *D. spicata*; Tesla, October 4, 1951 (J. E. Gillaspay), on *D. spicata*; and Tesla, July 27, 1950 (A. E. Pritchard), on *D. spicata*.

### 5. *Dolichotetranychus summersi* Pritchard and Baker

(Fig. 7)

*Dolichotetranychus summersi* Pritchard and Baker, 1952, Univ. California Pubs. Ent. 9(1):45. Holotype, male, Calexico, California, on *Cynodon dactylon*; in the U. S. National Museum.

*Dolichotetranychus summersi* is distinctive by lacking the ventral pair of rostral setae. The female is further distinguished by having a single pair of genital setae; and there are only two pairs of genitoanal setae present in the male. This species is known only from southern California, on Bermuda grass.

**Male.** Body slender. Palpus with dorsal seta on third segment and long rodlike seta distally; rostrum without ventral setae. Femur II with short dorsal seta, slightly longer than length of segment; tarsi I and II each with two sensory rods; tarsal claw with small but distinct hook, the outer tenent

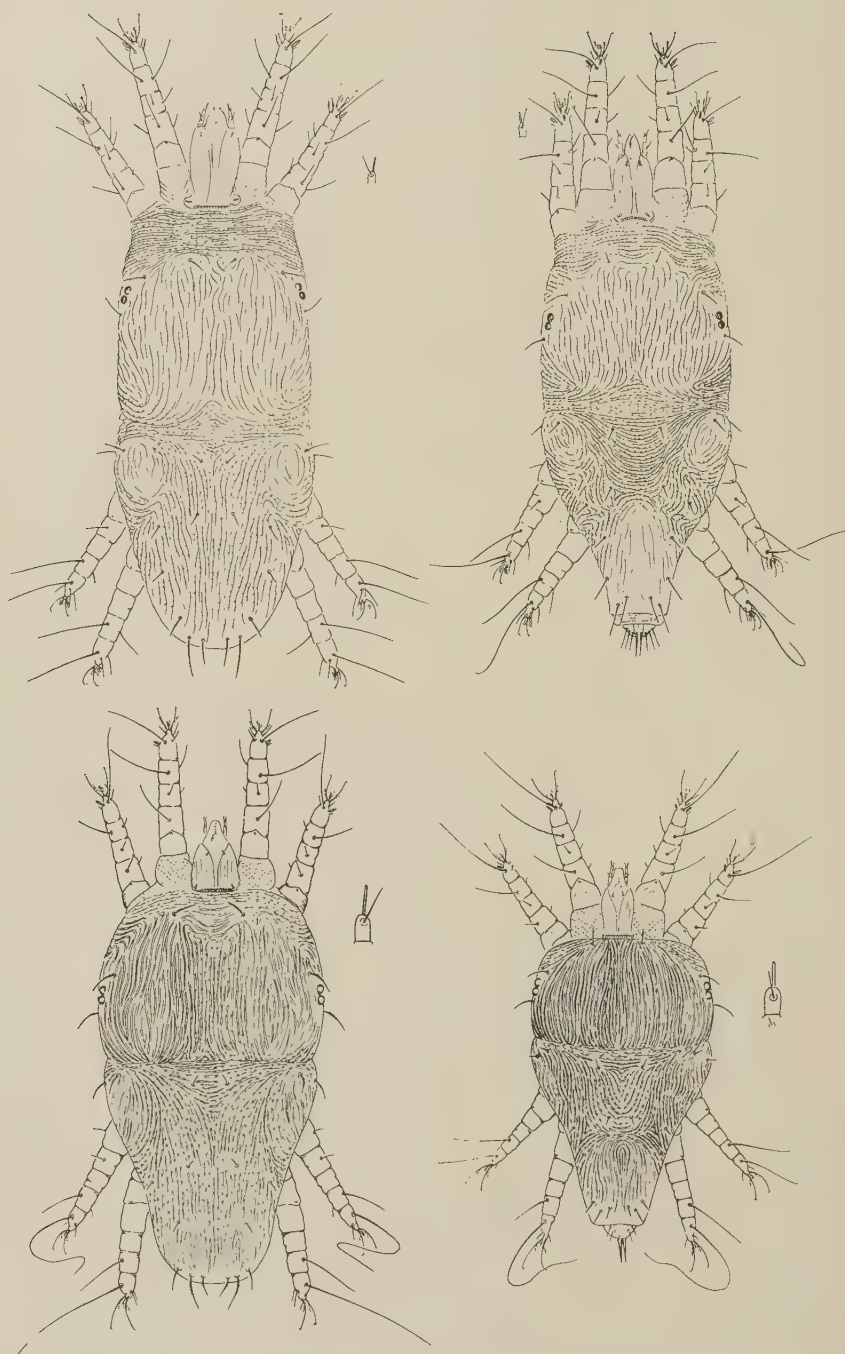


Fig. 8. *Dolichotetranychus vandergooti* (Oudemans): above, dorsal aspects of female and male (on *Dendrobium*); below, dorsal aspects of female and male (on *Arundina*).



hairs much longer than others. Propodosoma with long striae, longitudinal except for transverse striae anterior to first propodosomal setae; a few tubercles on posterior margin of propodosoma and on anterior transverse striae; dorsal propodosomals setiform, smooth, the anterior pair one fourth as long as distance between them. Metapodosoma with longitudinal striae medially, with few tubercles; dorsocentrals very short, setiform; humeral similar to third dorsal propodosomal. Opisthosoma with dorsal striae mostly longitudinal and without tubercles; dorsolaterals setiform, slightly serrate, the fourth nearly twice as long as the third and fifth. Anterior medioventrals long, much longer than the distance between them; posterior medioventrals short, slightly longer than seta of coxa IV. Genital stylets slender, longer than the length of tibia IV. Length of body  $223\mu$ , including rostrum  $267\mu$ ; greatest width of body  $93\mu$ .

**Female.** Palpus similar to that of male. Femur II with dorsal seta about as long as segment; tarsi I and II each with a single sensory rod; claw similar to that of male. Propodosoma dorsally with longitudinal striae, with tubercles only on posterior margin and on anterior transverse striae. Hysterosoma with U-shaped striae an anterior portion and longitudinal striae posteriorly; a few tubercles medially and anteriorly. Dorsocentrals small, simple; humeral about as long as propodosomals; first two pairs of dorsolaterals longer than dorsocentrals and last three pairs slightly longer than propodosomals, stronger, and serrate. Genital plate with longitudinal striae, without tubercles; pregenital setae about half as long as single pair of genital setae; two pairs of anal setae. Anterior medioventrals much longer than distance between them; posterior medioventrals about one fourth as long but much longer than seta on coxa IV. Length of body  $250\mu$ , including rostrum  $306\mu$ ; greatest width of body  $116\mu$ .

The types are from the Imperial Valley, California. New collections studied are from the Coachella Valley, California, October 25, 1952 (R. F. Smith), on *Cynodon dactylon*; and from Riverside, California, January 7, 1954 (J. Hall), on *C. dactylon*.

## 6. *Dolichotetranychus vandergooti* (Oudemans)

(Fig. 8)

*Pseudoleptus vandergooti* Oudemans, 1927, Ent. Ber. 7:179. Types, all stages, Buitenzorg, Java, on *Dendrobium* sp.; in the Rijksmuseum van Natuurlijke Historie, Leiden, Holland.

*Dolichotetranychus vandergooti*, Pritchard and Baker, 1952, Univ. California Pubs. Ent. 9(1):45.

The female of *Dolichotetranychus vandergooti* may be recognized by having a single pair of anal setae, a short dorsal seta on femur II, the pregenital setae set rather close together, and the hook of the claw moderately developed. The male may be differentiated from other species by having a single seta terminally on the palpus and two sensillae on each of tarsi I and II. This species is widespread on certain orchids in the Pacific area.

**Male.** Body relatively short and broad. Palpus with dorsal seta on third segment and a long rodlike seta distally. Femur II with a short dorsal seta; tarsi I and II each with two rodlike setae; tarsal claws with moderate hook.

and outer tenent hairs much longer than others. Propodosomal striae long, longitudinal, with tubercles only on posterior margin and on anterior transverse striae; dorsal propodosomals of medium length, the anterior pair not half as long as distance between them. Metapodosoma with medium to long longitudinal striae, with tubercles except on shoulders; dorsocentrals and humeral setae short and simple, of equal length. Opisthosoma with longitudinal striae, without tubercles; first two pairs of dorsolaterals similar to dorsocentrals and last three pairs about twice as long and strong. Genital stylets slightly longer than tibia IV. Genitoanal setae setiform, similar in length. Length of body  $233\mu$ , including rostrum  $280\mu$ ; greatest width of body  $100\mu$ .

**Female.** Palpus similar to that of male. Femur II with short dorsal seta; claws similar to those of male; tarsi I and II each with a single rodlike seta. Propodosoma dorsally with longitudinal striae of medium length; tubercles on median and posterior margins and on anterior transverse striae; propodosomal setae of medium and equal length, strong, serrate, the anterior pair not quite half as long as distance between them. Hysterosoma with longitudinal striae forming a V-pattern; tubercles covering most of dorsum except on shoulders; dorsocentrals short, simple; humerals serrate, about twice as long (but shorter than propodosomals); first two pairs of dorsolaterals similar to dorsocentrals; last three pairs of dorsolaterals much longer, serrate, the next to last pair longer than others. Genital plate with longitudinal striae and with tubercles; pregenital setae simple and shorter than serrate genital setae; with a single pair of anal setae. Anterior pair of medioventral hysterosomal setae four to five times as long as short posterior pair. Length of body  $280\mu$ , including rostrum  $333\mu$ ; greatest width of body  $133\mu$ .

Specimens studied in addition to the types are from the Canal Zone (at Brownsville, Texas), May 6, 1947, on *Dendrobium* sp.; Siam (at Honolulu), on *Dendrobium* sp.; Hilo, Hawaii, February 9, 1953 (E. B. Fryer), on *Arundina bambusifolia*; Philippine Islands (at Honolulu, Hawaii), June 1, 1936 (T. F. Chong), on *A. bambusifolia*; Panama (at San Pedro, California), December 17, 1951 (R. D. Clemens), on *A. bambusifolia*; Philippine Islands (at Honolulu, Hawaii) June 20, 1934 (L. A. Whitney), on *A. bambusifolia*; and Philippine Islands (at Honolulu, Hawaii), August 19, 1932, on *A. bambusifolia*.

The specimens from bamboo orchid differ from those from *Dendrobium* in that the female has only smooth striae on the genital plate, but no other differences are evident. However, they may represent a distinct species.

### 7. *Dolichotetranychus macer*, n. sp.

(Fig. 9)

*Dolichotetranychus macer* is distinctive in that the tarsal claws have no hook and femur II possesses a short dorsal seta. The female further differs from *D. salinas* in having a single pair of anal setae, and the male differs in having tibia IV more than two thirds as long as the genital stylets. This species is known only from South Africa, on grass.

**Male.** Body slender. Palpus with dorsal seta and a long and short distal



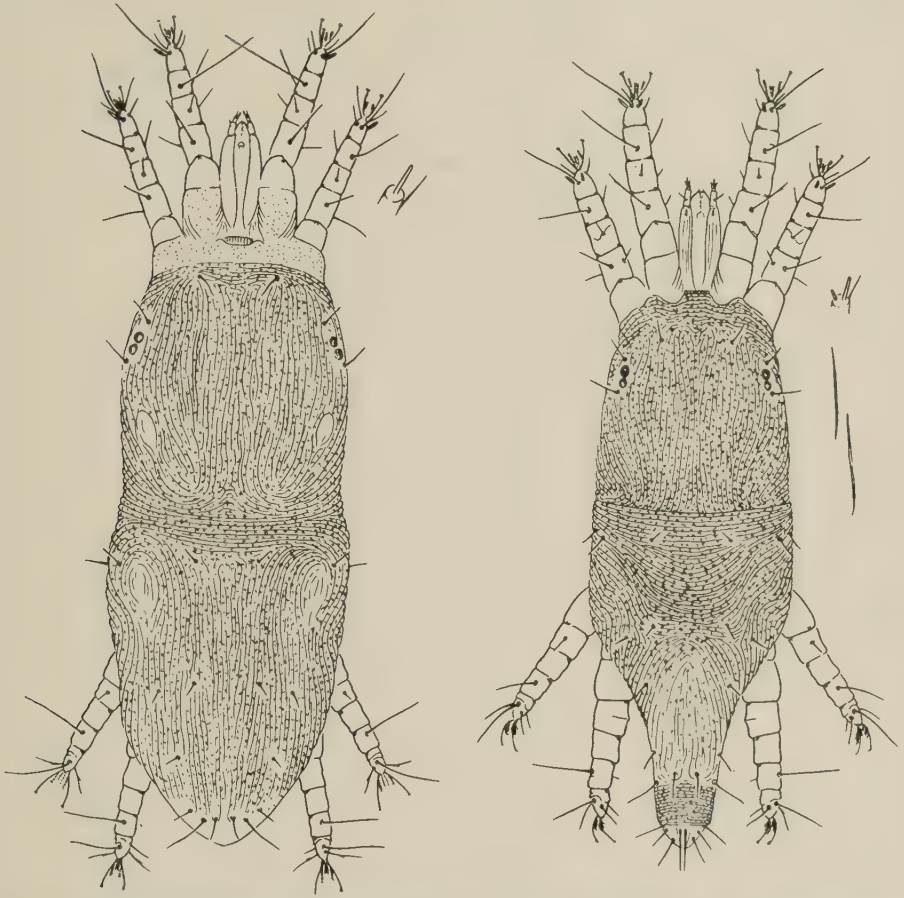


Fig. 9. *Dolichotetranychus macer*, n. sp.: dorsal aspects of female and male, with enlargements of palpal terminations and dorsal propodosomal striae.

rodlike seta on distal segment; rostrum with a pair of ventral setae. Dorsal setae of femora II longer than segment but not reaching anterior margin of genu; tarsi I and II each with a pair of rodlike sensory setae; tarsal claws without hook; outer tenent hairs longer than inner hairs. Propodosoma with striae of medium length running longitudinally except for transverse striae anterior to the first pairs of propodosomals; all propodosomal setae of equal length, the anterior pair not half as long as distance between them; propodosoma covered with tubercles. Metapodosomal striae long, in general transverse; setae short and simple, similar to the propodosomals; dorsum covered with tubercles. Opisthosoma with long longitudinal striae, with few tubercles, the posterior two pairs of setae about twice as long as others. Genital stylets slender, slightly longer than tibia IV; first and third pair of genitoanal setae slightly longer than second pair. Length of body  $226\mu$ ; including rostrum  $290\mu$ ; greatest width of body  $93\mu$ .

**Female.** Palpus with only a single distal rodlike seta and a dorsal seta. Setal pattern of legs similar to that of male; tarsi I and II with a single sense rod each; tarsal claws not hooklike. In general all body striae longitudinal; the posterior shoulders of the propodosoma and anterior shoulders of the hysterosoma with a whorl of faint striae without tubercles. Dorsal propodosomal setae short, simple, the anterior propodosomals not half as long as distance between them. Dorsal hysterosomals somewhat shorter, the penultimate pair of hysterosomals two to three times as long as others. Genital plate with longitudinal striae, covered with large tubercles; genital setae simple, about a third longer than the widely spaced pregenital setae; with a single pair of anal setae. Length of body  $316\mu$ ; including rostrum  $406\mu$ ; greatest width of body  $126\mu$ .

**Holotype.** Male, Cape Province, South Africa (at Washington, D.C.), February 24, 1953 (H. Y. Gouldman), on *Aristida namaquensis*; type no. 2210 in the U. S. National Museum.

**Paratypes.** Four males, 20 females with same data as holotype.

### 8. *Dolichotetranychus floridanus* (Banks)

(Figs. 10, 11)

*Stigmaeus floridanus* Banks, 1900, U. S. Dept. Agr. Div. Ent. Tech. Ser. 8:77. Types, females, Florida, on pineapple; of unknown disposition.

*Pseudoleptus floridanus*, Oudemans, 1927, Ent. Ber. 7:179.

*Dolichotetranychus floridanus*, Sayed, 1938, Paris Mus. d'Hist. Nat. Bul. (sér. 2) 10(6): 606; Pritchard and Baker, 1952, Univ. California Pubs. Ent. 9(1):44.

*Trichadenus floridanus*, McGregor, 1949, So. California Acad. Sci. Mem. 3(2):30.

*Dolichotetranychus floridanus* is characterized by having a short dorsal seta on femur II, the female with two pairs of anal setae, and the male with two sensillae on each of tarsi I and II. The female is further characterized by having smooth striae on the genital plate. This species is widespread on pineapple.

**Male.** Body slender. Palpus with dorsal seta on third segment and two distal rodlike setae. Femur II with short seta; tarsi I and II each with a pair of rodlike sensory setae (the anterodistal member of each pair is variable in size); tarsal claw with small hook; outer tenent hairs much longer than others. Propodosoma with long longitudinal striae, without tubercles except for a small area medially and posteriorly and on transverse striae anterior to first pair of propodosomals; propodosomal setae of medium length, serrate. Metapodosoma with longitudinal striae, with tubercles medially; dorsocentrals short, simple; humerals about three times as long and serrate. Opisthosoma with longitudinal striae without tubercles; the posterior three pairs of dorsolaterals strong, serrate, about twice as long as first two pairs. Genital stylets short, about same length as tibia IV; with three pairs of genitoanal setae of equal length. Length of body  $253\mu$ ; including rostrum  $300\mu$ ; greatest width of body  $120\mu$ .

**Female.** Palpus with dorsal seta on third segment but only a single rodlike seta distally. Femur II with a short seta; tarsi I and II each with a single rodlike sensory seta; claws similar to those of male. Propodosoma dorsally with short striae, those dorsocentrally bearing tubercles; propodo-



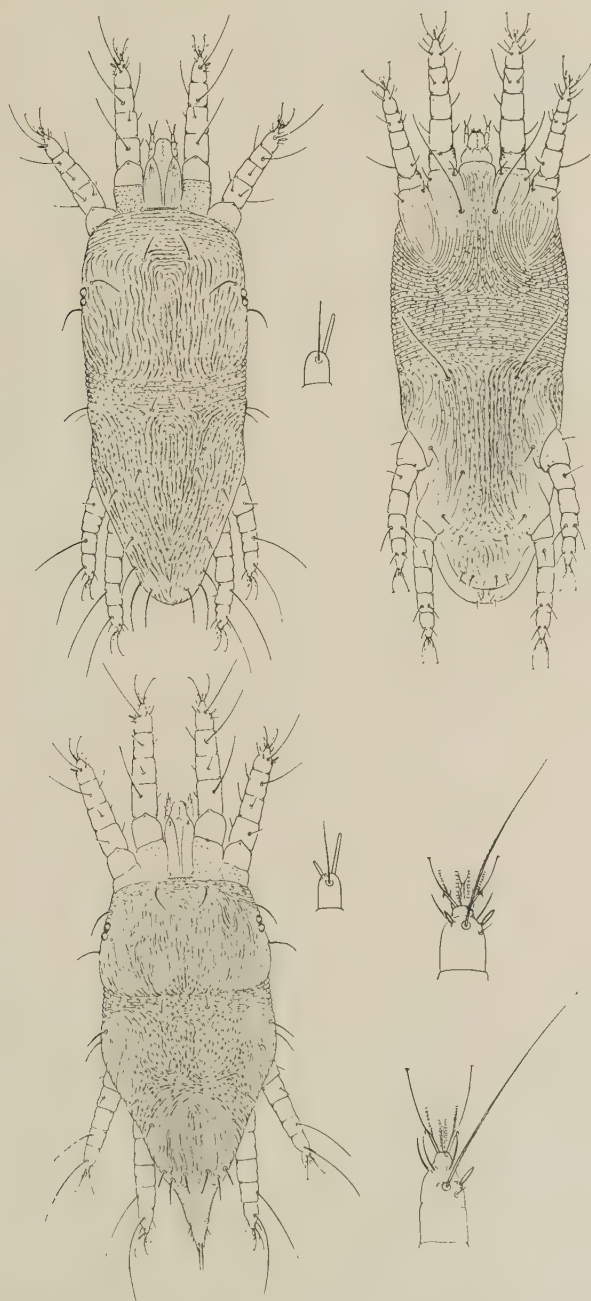


Fig. 10. *Dolichotetranychus floridanus* (Banks) (from pineapple): above, dorsal and ventral aspects of female, with enlargement of third palpal segment; lower left, dorsal aspect of male, with enlargement of third palpal segment; lower right, tarsus I of male (above) and female (below).

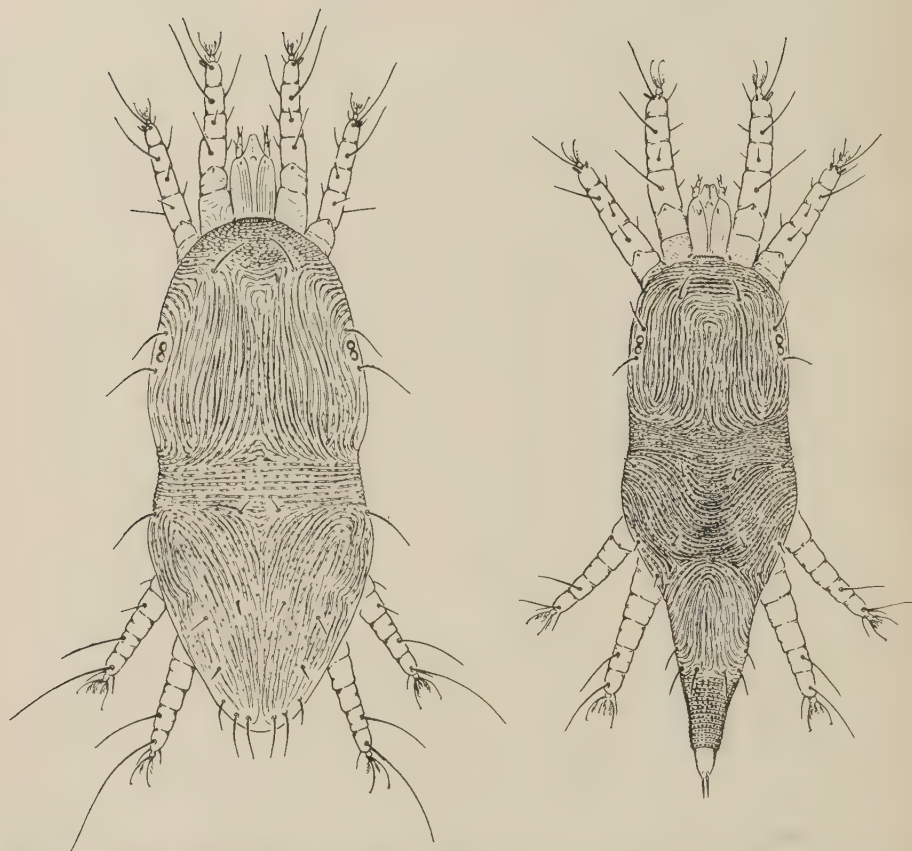


Fig. 11. *Dolichotetranychus floridanus* (Banks) (from *Sporobolus*): dorsals aspects of male and female.

somals strong, serrate, of equal length, the first pair not quite as long as distance between them. Hysterosoma with longitudinal short striae, all bearing tubercles; dorsocentrals short and simple; humerals slightly longer and serrate; first two pairs of dorsolaterals similar to dorsocentrals, the last three pairs two to three times longer, stronger, and serrate, the next to last pair being the longest. Hysterosoma with anterior medioventrals about three times as long as posterior medioventrals, the latter about twice as long as seta on coxa IV. Entire venter of mite covered with tubercles. Genital plate with longitudinal striae, but without tubercles. Pregenital and genital setae short, of equal length; two pairs of anal setae. Length of body  $300\mu$ , including rostrum  $366\mu$ ; greatest width of body  $130\mu$ .

Specimens studied are from Florida, Cuba, Puerto Rico, Panama, Honduras, Mexico, Hawaii, Philippines, Japan, and Java, all collections being from pineapple. Wolfenbarger (1954) states that the mite is a serious pest only on young plants.



Two series have also been studied from grasses in the western United States: Woodward, Oklahoma, October 14, 1948 (E. H. McIlvain), on *Sporobolus cryptandrus*; and Modena, Utah, September 22, 1925 (Shantz and Piemeisel), on *Bouteloa gracilis*. This distribution appears to be anomalous for *Dolichotetranychus floridanus*, but no significant differences are apparent between these specimens and those from pineapple.

**9. *Dolichotetranychus australianus* (Womersley), new combination**

(Fig. 12)

*Trichadenus australianus* Womersley, 1943, So. Austral. Mus. Rec. 7:245. Types, males and females, Gayndah, South Queensland, on *Cynodon dactylon*; in the South Australian Museum.

The female of *Dolichotetranychus australianus* closely resembles that of *D. floridanus* in that the dorsal seta on femur II is short and there are two pairs of anal setae. However, the male is distinct in that it possesses a single rodlike seta on tarsus II and the palpus bears a single seta terminally. This species occurs in Australia and South Africa on grass.

**Male.** Body slender. Palpus with dorsal seta on third segment and a single long rodlike terminal seta. Femur II with a short dorsal seta; tarsus I with two rodlike setae, one being very small; tarsus II with a single rodlike seta; tarsal claws with hook; outer tenent hairs much longer than others. Propodosoma with long longitudinal striae, with tubercles only on posterior margin and on anterior transverse striae; dorsal propodosomals smooth, of medium length, the anterior pair not half as long as distance between them. Metapodosoma with striae transverse; with tubercles except on humeral portions of body; dorsocentrals, humerals, and first two pairs of dorsolaterals short, simple, of equal length. Opisthosoma with longitudinal striae; the posterior three pairs of dorsolaterals about one third longer than others, stronger, serrate. Genital styles longer than average, longer than tibia IV; genitoanal setae of medium length, smooth, and of equal size. Length of body  $266\mu$ , including rostrum  $316\mu$ ; greatest width of body  $126\mu$ .

**Female.** Palpus similar to that of male. Femur II with short dorsal seta; tarsal claws with hook; tarsi I and II each with a single distal rod. Propodosoma with longitudinal striae of short to medium length, entire dorsum covered with small tubercles; dorsal propodosomal setae serrate, of medium length, the anterior pair not quite half as long as distance between them. Hysterosoma with striae of short to medium length, forming a broad U-shaped pattern on anterior portion, and longitudinal posteriorly; entire dorsum of hysterosoma covered with small tubercles; dorsocentrals and first two pairs of dorsolaterals short, simple, of equal length; humerals serrate, about one third longer than dorsocentrals; posterior three pairs of dorsolaterals three to four times as long as others, serrate, the penultimate pair the longest. The anterior medioventral hysterosomal seta four to five times as long as posterior pair. Genital plate with longitudinal striae, without tubercles. Pregenital setae only slightly shorter than genital setae. Two pairs of anal setae. Length of body  $282\mu$ , including rostrum  $350\mu$ ; greatest width of body  $140\mu$ .

Type specimens from Australia, on *Cynodon dactylon*, were studied

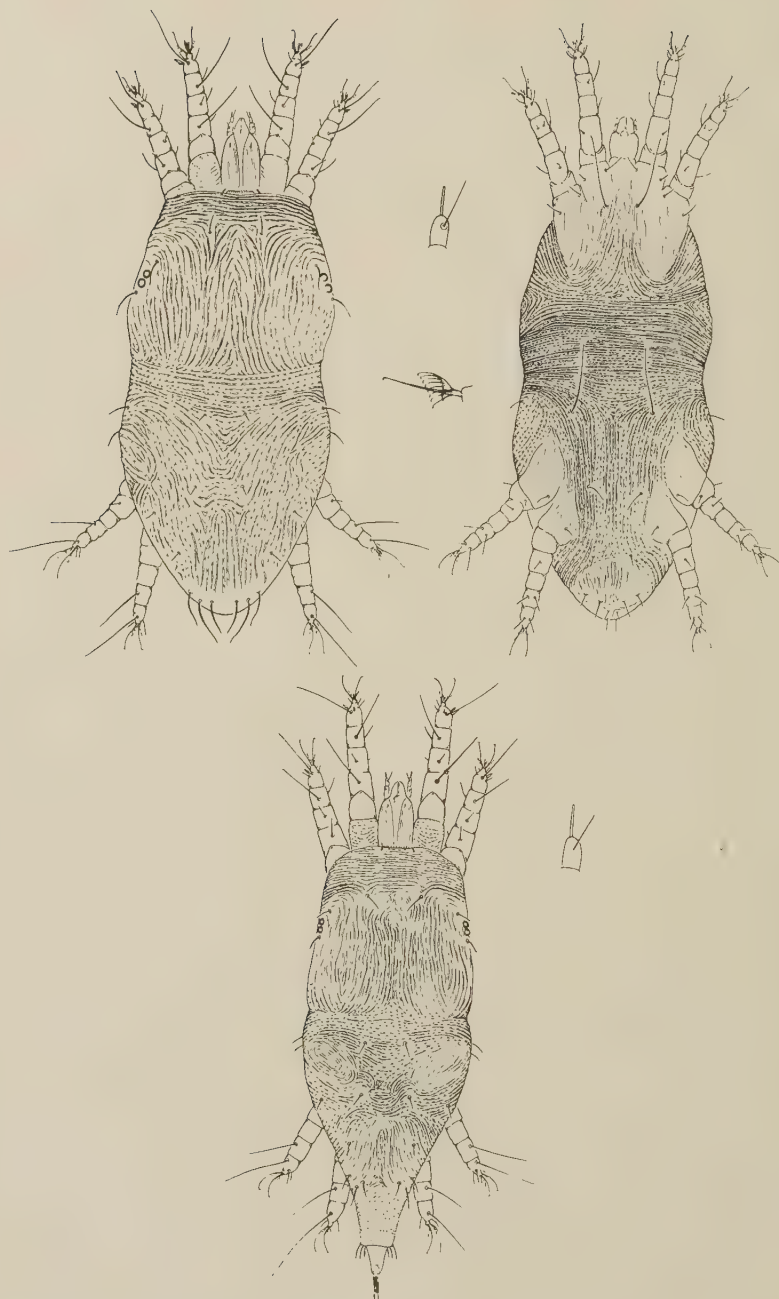


Fig. 12. *Dolichotetranychus australianus* (Womersley): above, dorsal and ventral aspects of female, with enlargements of third palpal segment and claw; below, dorsal aspect of male, with enlargement of third palpal segment.

through the courtesy of Dr. H. Womersley. Additional specimens are from Kimberly, South Africa (at Washington, D.C.), August 2, 1949 (W. B. Wood), on *C. magennis*.

### 10. *Dolichotetranychus apaches*, n. sp.

(Fig. 13)

The female of *Dolichotetranychus apaches* closely resembles that of *D. australianus* in that the dorsal seta on femur II is short and two pairs of anal setae are present. The male similarly possesses a single rodlike sensilla on tarsus II. However, the female genital plate is tuberculate, and the male palpus bears two sensory setae terminally. This species occurs in Florida, on bromeliads.

**Male.** Body slender. Palpus with dorsal seta on third segment and a long and a short rodlike seta distally. Femur II with a short dorsal seta; tarsi I and II each with a single rodlike sensory seta; tarsal claws hooked, the outer tenent hairs much longer than others. Propodosoma with longitudinal striae, with tubercles on posterior portion; tubercles also on transverse striae anterior to first pair of propodosomals; dorsal propodosomals short, slightly serrate, of equal length, the anterior pair about one third as long as distance between them. Metapodosoma with long striae running longitudinally, forming a V-pattern, with tubercles. Dorsocentral setae short, simple; humerals only slightly longer. Opisthosoma with longitudinal striae, bearing a few tubercles on anterior median striae. First two pairs of dorsolaterals similar to dorsocentrals; last three pairs only slightly longer. Genital stylets short, slightly longer than tibia IV; three pairs of genitoanal setae, the first pair only about one third longer than last two pairs. Length of body  $256\mu$ , including rostrum  $300\mu$ ; greatest width of body  $100\mu$ .

**Female.** Palpus with a dorsal seta on third segment and a single long rodlike seta distally. Femur II with a short dorsal seta. Dorsal propodosomal striae longitudinal, of short to medium length, with a few tubercles on lateral and posterior half; tubercles also on anterior transverse striae; dorsal propodosomals of equal length, serrate, the anterior pair about half as long as distance between them. Hysterosomal striae in general longitudinal and forming a V-pattern medially; dorsum covered with tubercles; dorsocentral setae short, simple; humerals serrate and about as long as propodosomals; first two pairs of dorsolaterals similar to dorsocentrals; last three pairs of dorsolaterals two or more times as long as others, serrate, the last two pairs longest. Anterior medioventral hysterosomal setae long, about three times as long as the short posterior pair, the latter about twice as long as seta on coxa IV. Genital plate with longitudinal striae, with tubercles; pregenital setae only slightly shorter than simple genital setae; two pairs of anal setae. Length of body  $200\mu$ , including rostrum  $330\mu$ ; greatest width of body  $130\mu$ .

**Holotype.** Male, Coral Gables, Florida, April 20, 1949 (O. D. Link), on "air plant" sheath; type no. 2214 in the U. S. National Museum.

**Paratypes.** Three males, 20 females, Miami, Florida, January 4, 1949 (O. D. Link), on bromeliad; 9 females, Opa Locka, Florida, December 20, 1948 (O. D. Link), on bromeliad; 1 male, 5 females, Davie, Florida, August 26, 1953 (O. D. Link), on bromeliad; 3 males, 6 females, Coral Gables, Florida, April 20, 1949 (O. D. Link), on "air plant."



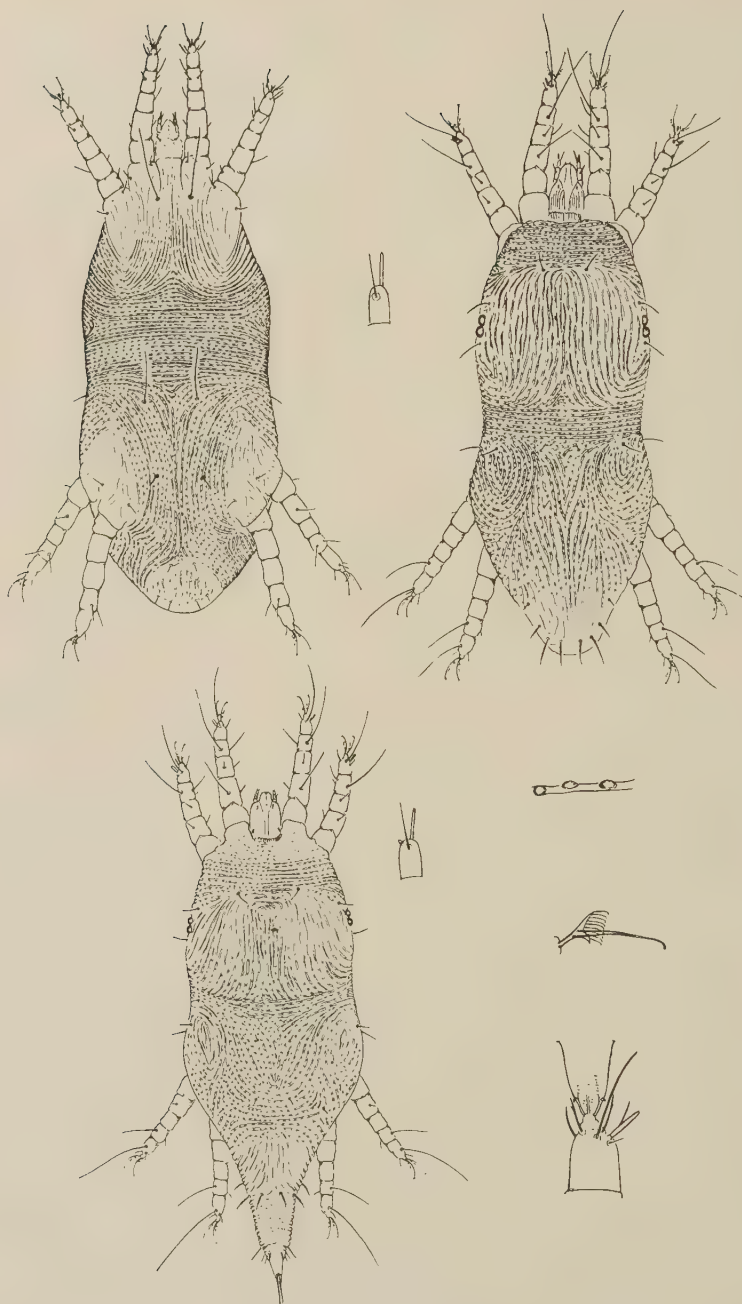


Fig. 13. *Dolichotetranychus apaches*, n. sp.: above, ventral and dorsal aspects of female, with enlargement of third palpal segment; lower left, dorsal aspect of male, with enlargement of third palpal segment; lower right, enlargements of a stria, claw, and tarsus II of female.

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